

Claims

- [c1] 1.A fluid manifold for a combination welder and air compressor, said manifold comprising:
a unitary manifold block, said manifold block being elongated and having first and second ends;
a first fluid communication conduit system in said first end and a second fluid communication conduit system in said second end of said unitary manifold block, said unitary manifold block providing fluid isolation between said first fluid communication system and said second fluid communication system;
said first fluid communication system comprising a first main inlet port adapted to receive a first main flow of fluid, a first main outlet port for discharging that first main flow of fluid and a first main passageway within said unitary manifold block communicating between said first main inlet port and said first main outlet port, and at least one first auxiliary port formed in said unitary manifold block in communication with the first main flow of fluid passing between said first main inlet port and said first main outlet port; and
said second communication system comprising a second main inlet port adapted to receive a second main flow of fluid and a second main outlet port for discharging that second main flow of fluid, and at least one second auxiliary port formed in said unitary manifold block in communication with the second main flow of fluid passing between said second main inlet port and said second main outlet port.
- [c2] 2.A fluid manifold as defined in claim 1 wherein said at least one first auxiliary port comprises an auxiliary port formed in said unitary manifold block and oriented 90 degrees with respect to said first main inlet port.
- [c3] 3.A fluid manifold as defined in claim 2 wherein said first auxiliary port is a pipe thread fitting of a smaller diameter than said main outlet port.
- [c4] 4.A fluid manifold as defined in claim 1 wherein said elongated unitary manifold block has a main longitudinal axis, and wherein said first main passageway is formed parallel to the main longitudinal axis of said unitary manifold block.
- [c5] 5.A fluid manifold as defined in claim 1 wherein said first main inlet port and

first said main outlet port are formed in said unitary manifold block at approximately 90 degrees apart.

- [c6] 6.A fluid manifold as defined in claim 1 wherein said at least one first auxiliary port comprises an auxiliary port formed in said unitary manifold block at about 90 degrees to said main longitudinal axis of said unitary manifold block.

[c7] 7.A fluid manifold as defined in claim 1 wherein said at least one first auxiliary port comprises first and a second auxiliary ports, each communicating with the first main flow of fluid passing between said first main inlet port and said first main outlet port, said second auxiliary port being parallel to the main longitudinal axis of said elongated unitary manifold block.

[c8] 8.A fluid manifold as defined in claim 1 wherein said second main inlet port and said second main outlet port are coaxially formed in said unitary manifold block.

[c9] 9.An air compressor system for providing a stream of compressed air substantially free of oil to an end use means, said air compressor system comprising:
an air compressor for providing a stream of compressed air laden with oil;
an oil separator having an inlet for receiving the stream of compressed air laden with oil for said air compressor and an outlet for discharging air having oil separated therefrom;
an oil coalescing filter having an inlet for receiving air from said oil separator for removing additional oil therefrom and having an outlet for discharging air substantial free of oil; and
a unitary manifold block having a first fluid communication system comprising a first main inlet port for receiving the stream of air discharged from said oil separator, a first main outlet port for discharging said stream of air, and a first main passageway formed in said unitary manifold block communicating between said first main inlet port and said first main outlet port, a first air conduit for communicating said air discharged from said first main outlet port to said inlet of said coalescing filter, a second air conduit for communicating said stream of air discharged from said outlet of said coalescing filter to a

second fluid communication system formed in said unitary manifold block, said second fluid communication system comprising a second main inlet port for receiving the stream of air from said second air conduit, a second main outlet port formed in said unitary manifold for delivering the stream of air to the end use means, and a second main passageway formed in said unitary manifold block communicating between said second main inlet port and said second main outlet port, said unitary manifold blocking fluid communication between said first fluid communication system and said second fluid communication system, said unitary manifold further having at least one auxiliary port communicating with one of said first fluid communication system and said second fluid communication system.

- [c10] 10. An air compressor system as defined in claim 9 wherein said at least one auxiliary port comprises a first auxiliary port formed in said unitary manifold block in communication with said first fluid communication system and oriented 90 degrees with respect to said first main inlet port.
- [c11] 11. An air compressor system as defined in claim 9 wherein said elongated manifold block has a main longitudinal axis, and wherein said first main passageway is formed parallel to the main longitudinal axis of said unitary manifold block.
- [c12] 12. An air compressor system as defined in claim 9 wherein said at least one auxiliary port comprises at least two auxiliary ports in communication with said first fluid communication system, wherein one of said at least two auxiliary ports is oriented parallel to the main longitudinal axis of said elongated unitary block.
- [c13] 13. An air compressor system as defined in claim 9 wherein said at least one auxiliary port comprises an auxiliary port in communication with said first fluid communication system and orientated at about 90 degrees to said main longitudinal axis of said block.
- [c14] 14. A method of providing communication between a plurality of fluid conduits and auxiliary components and providing physical support for some of said

auxiliary components in an air compressor system, said method comprising the steps of:

providing a unitary manifold block having at least a first and a second fluid communication systems that are fluidly isolated from each other, each of systems having a main inlet port, a main outlet port and a main passageway communicating therebetween for passing a main flow of a fluid between said main inlet ports and said main outlet ports, and said unitary manifold block further having at least one auxiliary port communicating with first and second fluid communication systems;

connecting the plurality of fluid conduits to said at least first and said second fluid communication systems; and

connecting auxiliary components to said manifold in communication with one of said at least first and second fluid communication systems.

- [c15] 15. A method as defined in claim 14 wherein said step of connecting auxiliary components comprises connecting a safety relief valve to said manifold block to be in communication with said first fluid communication system.
- [c16] 16. A method as defined in claim 14 wherein said step of connecting auxiliary components comprises connecting a minimum pressure valve to said manifold block to be in communication with said second fluid communication system.
- [c17] 17. A method as defined in claim 14 wherein said step of providing a unitary manifold block comprises providing an elongated manifold block having a longitudinal axis and where the main passageway of said first fluid communication system is formed along said longitudinal axis.
- [c18] 18. A welding and air compression system on a common frame, comprising:
 - an air compressor for providing a flow of compressed air for a pneumatic utilization device;
 - means for generating an arc welding current;
 - means for driving both the air compressor and the means for generating an arc welding current;
 - a manifold for making various fluid connections in the welding and air compressor system, said manifold being fixed in a position with respect to the

common frame of the welding and air compressor system and comprising a unitary manifold block, said unitary manifold block being elongated and having first and second ends;

a first fluid communication system in said first end of said unitary manifold block and a second fluid communication conduit system in said second end of said unitary manifold block, said unitary manifold block providing fluid isolation between said first fluid communication system and said second fluid communication system;

said first fluid communication system comprising a first main inlet port adapted to receive the flow of compressed air from said air compressor, a first main outlet port for discharging that flow of compressed air and a first main passageway within said unitary manifold communicating between said first main inlet port and said first main outlet port, at least one auxiliary port formed in said unitary manifold in communication with the first communication system; and

said second fluid communication system comprising a second main inlet port adapted to receive the flow of compressed air after passing through an intermediate component, and a second main outlet port for discharging that flow of compressed air to said pneumatic utilization device, and at least one second auxiliary port formed in said unitary manifold in communication with said second fluid communication system.

- [c19] 19. A welding and air compression system as defined in claim 18 wherein said unitary manifold block has an elongated, generally rectangular cross section having a front, rear, top and bottom surfaces and said first main inlet port extends through said bottom surface and said first main outlet port extends through said rear surface.
 - [c20] 20. A welding and air compression system as defined in claim 18 wherein at least one first auxiliary port comprises an auxiliary port extending through said first end of said manifold block and oriented generally along a longitudinal axis of said elongated manifold block.
 - [c21] 21. A welding and air compression system as defined in claim 19 wherein said

second main inlet port and said second main outlet port are generally coaxial and extend through, respectively, the bottom surface and the top surface of said unitary manifold block.

[c22] 22. A welding and air compression system as defined in claim 19 where said at least one first auxiliary ports comprises an auxiliary port extending through said front surface of said manifold block.